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PZ•PRO

USER GUIDE

Radial engineering

TrueToYourMusic

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RADIAL PZ•PRO

USER GUIDE

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Thank you for purchasing the PZ-Pro, a dual-channel instrument preamplifier designed for ultimate control over your sound, with both microphone and instrument connections along with footswitch controls to streamline changes on stage during a performance.

The PZ-Pro is packed with features, and offers a number of ways in which it can be used. To fully utilize all the possible functions of PZ-Pro, please take a moment to read through this manual, which details each feature and outlines their use. If afterwards you still find yourself with questions, visit the FAQ page on the Radial website. This is where we post questions from other users along with product updates. If you still require clarification feel free to send an email to support@radialeng.com and we will do our best to respond promptly.

OVERVIEW

The PZ-Pro may appear complicated due to the many available features and configuration options, but it can be simplified by breaking it down into four main sections:

1 INPUTS AND EQ

The PZ-Pro has two input channels, so you can have two separate sound sources connected at the same time. Two 1/4" input jacks provide connection to any instrument source, and the PZ Boost switches allow you to optimize each input for use with piezo transducers. Channel B also features a microphone input, so you can blend a clip on microphone with your instrument pickups, or even connect a vocal mic.

2 EFX LOOP AND BOOST

Two additional features on the PZ-Pro are the EFX Loop and clean Boost, both of which can be configured to match your playing style and your specific setup. The EFX Loop allows you to connect your guitar effects pedals directly to the PZ-Pro, so you can share them across both inputs, or use them on just one source while leaving the other unaffected. A wet/dry control allows you to blend in how much of the pedal effects are added to your sound. The Boost is a class-A signal booster with up to +15 dB of clean gain that allows you to cut through the mix when soloing.

3 FOOTSWITCH CONTROL

The PZ-Pro also has three useful footswitches for real-time performance control on a live stage. The Input footswitch toggles between the two inputs, making instrument changeovers on stage silent and seamless. The EFX/Loop footswitch is assignable, and can be selected to turn the EFX Loop on and off, activate the clean Boost, or control both simultaneously. Lastly, the Mute footswitch provides an easy way to cut output signals from the PZ-Pro so only the Tuner out is active, allowing for quiet on stage tuning at a moment's notice.

4 OUTPUTS

Two balanced DI outputs are provided on the PZ-Pro over XLR connectors to feed PA systems up to 300' away without signal degradation or noise. Pre EQ and Post EQ options are provided, and both can be used simultaneously. This gives you the ability to send a direct feed of your instruments to the main PA system, while taking the Post EQ shaped sound to your monitor system for in-ears or stage wedges. In addition to the XLR outputs, the PZ-Pro also has a 1/4" amp out to feed a stage amplifier, and a buffered always-on output to feed a tuner pedal.

FEATURES - FRONT PANEL

1. **LEVEL:** Input level control for each channel with unity gain setting at 12 o'clock.
2. **EQ:** Variable EQ for each input with bass, semi-parametric mid range, and high boost/cut controls.
3. **FILTER:** Three-position switch and variable control activates a notch filter for targeted frequency removal or a high-pass filter to remove excessive low end rumble.
4. **FX BLEND:** Wet/dry control allows you to mix the original 'dry' input source with the 'wet' FX Loop returns.
5. **FX LOOP ASSIGN:** Selects whether guitar pedals in the FX Loop affect the signal on Input A, Input B, or both simultaneously.
6. **FOOTSWICH ASSIGN:** Used to set the Boost/FX Loop footswitch to activate the Boost, FX Loop, or both simultaneously.
7. **BOOST:** Sets the amount of clean boost applied when the Boost function is active. Up to +15dB of gain is available when this control is turned fully clockwise.

FEATURES - FRONT PANEL CONTINUED

8. **LOOP ON:** Recessed side-access switch ensures the FX Loop is always active, and won't change when the Boost/FX Loop Footswitch is pressed. FX Loop can still be assigned to Input A, Input B, or both.

9. **MUTE:** Footswitch cuts signal to all outputs except for the 1/4" Tuner Out. Use for instrument changeovers or quiet tuning on stage.

10. **BOOST/FX LOOP:** Assignable footswitch can activate the FX Loop, Boost, or both simultaneously, depending on the setting of the Footswitch Assign control.

11. **TOGGLE A/B:** Selects between inputs A and B, with LED indicators to display the active input. This switch is deactivated if A+B is engaged on the rear panel of the PZ-Pro, since both inputs will be always on.

12. **PZ BOOST:** Recessed side-access switches activate a 10dB signal boost on inputs A & B and increase the impedance to 10Meg Ohms for optimal use with piezo transducers.

FEATURES - REAR PANEL

1. **INPUTS A & B:** 1/4" inputs for guitars and instruments.
2. **INPUT B 180:** Polarity reverse switch for Input B helps to correct for phase issues when summing both inputs together. This switch also affects Mic Input B.
3. **A+B:** Sums Input A and Input B together after their respective EQ & Filter sections. Engaging this switch activates both inputs simultaneously and disables the Toggle Footswitch.
4. **48V:** Engages phantom power on Mic Input B for powering condenser microphones.
5. **MIC ON:** Activates the Mic Input for channel B. When this switch is pressed, the 1/4" instrument input for channel B is deactivated.
6. **MIC INPUT B:** XLR input for connecting a microphone to channel B of the PZ-Pro. Compatible with dynamic and condenser mics.
7. **TUNER OUT:** 1/4" buffered output to feed a tuner pedal. This output will always be active, even when the Mute Footswitch is engaged, allowing for quiet on-stage tuning anytime.
8. **AMP OUT:** 1/4" TS instrument-level output for feeding the input of a stage amplifier. Amp Out signals include all EQ & Filter settings, FX Loop and Boost functions.

FEATURES - REAR PANEL CONTINUED

9. **FX SEND & RECEIVE:** Unbalanced connections for adding mono effects pedals or pedal chains to the FX Loop of the PZ-Pro. These connections are activated using the Boost/FX Loop Footswitch.

10. **PRE EQ OUT:** Balanced XLR direct box output to feed a mic-level signal to the PA or a recording interface. Pre EQ output is not affected by EQ & Filter settings or by FX/Boost functions.

11. **180, LIFT:** Polarity reverse & ground lift switches for Pre EQ Out.

12. **POST EQ OUT:** Balanced XLR direct box output to feed a mic-level signal to the PA or monitor system. Post EQ output signal is affected by the EQ & Filter settings as well as the FX/ Boost functions.

13. **180, LIFT:** Polarity reverse & ground lift switches for Post EQ Out.

14. **15VDC:** Connection for the Radial 15VDC/400mA power supply (included).

15. **CABLE CLAMP:** Prevents accidental power disconnection by locking down the AC adapter cable.

MAKING CONNECTIONS - THE 1/4" INSTRUMENT INPUTS

The PZ-Pro features two 1/4" inputs on the rear panel, allowing you to connect two instruments and toggle between them or blend both together simultaneously. Using these inputs you can switch between two guitars with different tunings, blend together multiple pickup types on a single instrument, or switch between other acoustic instruments such as mandolin or banjo.

The 1/4" Inputs

The Level controls

Each input is equipped with a corresponding Level control, allowing you to adjust the relative volume of each instrument and compensate for any differences in output levels from your pickups. Start with both Level controls at 12 o'clock - this is the unity gain setting on the PZ-Pro. When turned up fully clockwise, the Level controls provide +20dB of gain to your input signals.

When using just a single instrument with the PZ-Pro, plugging into input A allows you to use both channels of the PZ-Pro as if you were playing through a two-channel amplifier. This is due to the fact that Input A automatically feeds into Input B when nothing is connected to the Input B 1/4" jack (and when the Mic On switch is disengaged). This gives you the ability to use both of the input channels with a single instrument, so you can use the Toggle Footswitch to select between the two Level, EQ and Filter settings when switching between verse and chorus, for example.

With only a single instrument connected to Input A, use the Toggle Footswitch to access the Level and EQ controls on channel B

USING THE PZ BOOST SWITCHES

Each of the 1/4" Inputs on the PZ-Pro is also equipped with a special PZ Boost circuit, which can be activated by engaging either one of the recessed switches on the right side of the unit. These switches raise the input impedance of each of the 1/4" inputs from 220k Ohms to 10Meg Ohms, while simultaneously engaging a class-A signal booster to bring the level up by an additional +10dB.

The Level controls

This PZ Boost helps broaden the frequency response and smooth out the transient peaks of instruments that employ piezo transducers. Engaging the PZ booster won't harm typical pickup systems, so feel free to experiment and try it out on different input sources to see if you like the results.

CONNECTING A MICROPHONE

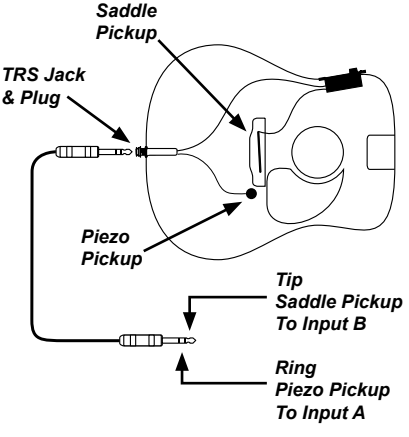
The PZ-Pro includes a locking female XLR jack for connecting a microphone to the Input of channel B. When activated, the microphone input overrides the instrument input for channel B - this is done by activating the Mic On switch next to the XLR connection. You can use this input for clip-on instrument mics, wireless microphones, and even vocal mics!

The Mic Input, 48V and Mic On

For dynamic microphones that don't require additional power, simply plug and play. When connecting condenser microphones that require phantom power, first connect your mic, then hit the Mute Footswitch to prevent any pops through the audio system, and finally activate the 48V switch on the rear panel of the PZ-Pro to power your microphone. The channel B Level control provides up to +55dB of gain when the Mic On switch is active.

CONNECTING INSTRUMENTS WIRED WITH TWO PICKUP SYSTEMS

Input B on the PZ-Pro is specially equipped to accommodate instruments with two pickup systems wired to a single 1/4" TRS (Tip, Ring, Sleeve) output. This allows you to feed a separate pickup system to each channel of the PZ-Pro using a single cable. Simply use a 1/4" TRS cable as shown in the diagram below to connect to Input B of the PZ-Pro, while leaving nothing connected to Input A. The Tip conductor of the cable will feed channel B, while the ring will feed channel A, giving you the ability to switch between the two pickups or blend them together with the A+B switch.



BLENDING BOTH INPUTS TOGETHER

While the PZ-Pro makes it easy to toggle between two inputs at the press of a footswitch, you may also wish to blend both input sources together, allowing you to combine the warmth and low end from a microphone with the brightness and clarity from your pickup system. To combine both input signals, press the A+B switch on the rear panel of the PZ-Pro. Once this switch is engaged the A and B LEDs will both illuminate and the Toggle Footswitch will no longer have any effect as both inputs will be active at all times.

The A+B switch

With the A+B switch engaged, the PZ-Pro can blend together two sources, such as a set of pickups and a microphone

Aside from the Toggle Footswitch, when blending both inputs together with the A+B switch the remaining PZ-Pro features will continue to function normally: The EQ and Filter sections still allow you to tailor the sound of each individual input before they are blended, and the FX Loop and Boost controls can be assigned to affect only Input A, Input B, or both.

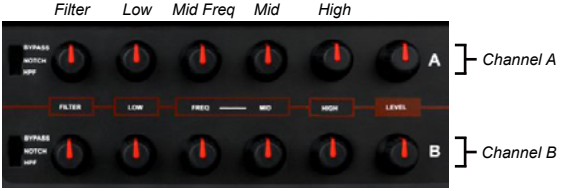
When summing two different signals from the same sound source, it is common for some frequency cancellation to occur as a result from each signal arriving at the PZ-Pro at slightly different times. The Input B 180 switch helps correct for this by reversing the polarity on Input B, affecting both the XLR Mic Input and the 1/4" Input on this channel.

The 180 switch

There is no right or wrong setting for the 180 switch, so try it in both the off and on positions while playing your instrument to see which one sounds best to your ears. If you have a hard time telling the difference, try playing the lowest note on your instrument, as frequency cancellation is easiest to hear in the lower register.

THE EQ & FILTER SECTIONS

Each channel of the PZ-Pro is equipped with a powerful EQ and Filter section that allows you to independently control the tone and tailor it to each instrument or microphone source. The controls for channel A are located along the top row of the PZ-Pro, while the controls for channel B are mirrored along the bottom row.



The dual EQ and Filter sections of the PZ-Pro

The EQ section begins with the High frequency control, which is a shelving EQ with a corner frequency of 1kHz, allowing you to boost or cut the high end by +/-10dB. The sweepable midrange EQ settings on the PZ-Pro uses two controls: the Mid knob controls the amount of boost or cut by +/-10dB, and the Freq knob sweeps the corner frequency from 350Hz (fully counter-clockwise) to 5kHz (fully clockwise). The Low EQ is a low-end shelf with a corner frequency of 500Hz and the ability to boost or cut by +/-14dB.

The Filter section on each channel of the PZ-Pro includes a variable Filter knob along with a 3-position selector switch. This allows you to bring in a notch filter to remove frequencies that are causing feedback on stage, or activate a high-pass filter to gently roll off excessive low frequencies and tailor the sound for use with different acoustic instruments such as mandolin or violin.

The Filter controls

When using acoustic instruments on a live stage, the low frequencies generated by the PA system can often cause the top of the instrument to resonate and create feedback due to the vibrations. This can be reduced by removing some of these low frequency signals feeding the PA. The HPF setting on the Filter Assign switch activates a high-pass filter designed just for this purpose. It rolls off low frequencies from 40Hz (Filter knob fully counter-clockwise) to 250Hz (Filter knob fully clockwise).

Another tool for controlling feedback on stage is the Notch Filter, which allows you to focus on a problematic frequency and surgically remove it without affecting the tone of the instrument. To activate this feature, set the Filter Assign switch to Notch. This alters the function of the Filter control knob to remove a narrow frequency band and attenuate it by -15dB. The frequency range of the Notch Filter is sweepable from 55Hz (Filter knob fully counter-clockwise) to 350Hz (Filter knob fully clockwise).

THE FX LOOP AND BOOST

The FX Loop on the PZ-Pro allows you to connect mono guitar pedals and other unbalanced effects devices and seamlessly integrate them into your performance. To connect effects pedals to the PZ-Pro, use a regular 1/4" TS instrument cable and connect the FX Send to the input of the guitar pedal, and the FX Receive to the output of the device.

The FX Loop connectors

The FX Loop controls

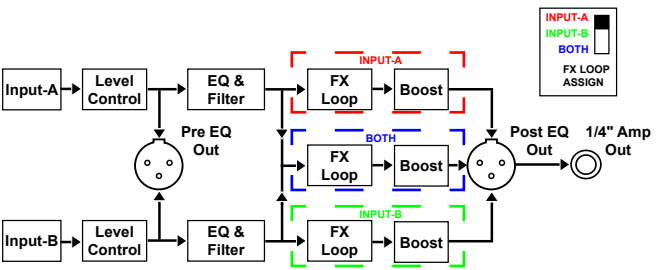
You can choose to have the pedals in the FX Loop affect Input-A, Input-B, or both depending on the setting of the FX Loop Assign switch. This allows you to add effects such as delay or chorus to just one of your instruments, leaving the other unaffected.

The FX Blend control lets you blend in the desired amount of 'wet' effects into the signal path without affecting the original 'dry' signal. This lets you to retain the original tone of your acoustic guitar or bass and mix in a touch of distortion or overdrive to your sound while retaining the fundamental tone of the instrument. With the FX Blend turned fully clockwise, you will only hear the output of your effects pedals when the FX Loop is active. With this control set to 12 o'clock, there will be a 50/50 mix between your wet and dry signals.

The Boost control on the PZ-Pro adds clean gain to your signal at a moment's notice, handy for soloing or when you need your sound to cut through the mix. Use the Boost level control to set the amount of gain applied to the signal, with a maximum of +15dB added when turned fully clockwise.

The Boost control

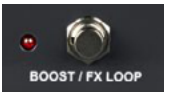
The Boost feature will always come directly after the FX Loop in the PZ-Pro signal path, as it is also affected by the FX Loop Assign switch. The diagram below shows the three settings of this switch and how they change which inputs are affected by the FX Loop and Boost.



The three options for the FX Loop and Boost in the PZ-Pro signal chain

THE BOOST/FX LOOP FOOTSWITCH

The middle footswitch on the PZ-Pro is an assignable switch that can activate either the FX Loop, the Boost, or both at once. Press this switch once to activate the selected features which will also turn on the red LED indicator. Press a second time to turn them back off.



The Boost/FX Loop Footswitch

The Footswitch Assign control

The Footswitch Assign control lets you select which features will be activated by the Boost/FX Loop Footswitch. Set this to Boost or Loop if you only want the footswitch to turn on one of these features at a time. When set to 'both', the footswitch will turn on the FX Loop and the Boost simultaneously, allowing you to add in your effects pedals and increase the gain for soloing.

A Loop On switch is also provided on the left side of the PZ-Pro, which allows the FX Loop to remain active at all times, so you can control your effects pedals individually using their own footswitches. Use a small screwdriver to activate this recessed 'set and forget' switch. Once active, the Boost/ FX Loop Footswitch will only control the Boost function.

The Loop On switch

THE PZ-PRO OUTPUTS

The PZ-Pro has two XLR outputs which provide balanced, mic-level signals that be run up to 100 meters (300ft) without noise to feed the microphone inputs of a mixing console or a recording interface. These outputs are active whenever the Mute Footswitch is not engaged, and both can be used simultaneously depending on your setup requirements.

The Pre and Post EQ XLR outputs

The Pre EQ XLR Out takes a tap of the active input immediately following the input Level control. This allows you to capture the signal before (Pre) the EQ, FX and Boost features to send a 'dry' signal to the PA or recording system. This output is often preferred by the sound engineer as it gives them a clean unaffected tap of your instrument to optimize for playback through the house sound system.

THE PZ-PRO OUTPUTS CONTINUED

The Post EQ XLR Out takes a signal that is after (Post) the EQ, FX and Boost features, providing an affected 'wet' signal that is perfect for feeding a monitor mix system or a powered PA monitor for gigs without a dedicated sound engineer.

Each XLR output includes two additional features: a 180° switch and a Ground Lift. The 180° switch reverses the polarity at the XLR output to help phase-align signals when this output is mixed together with the signal from a mic'd up stage amplifier. The 180° switch can also help reduce feedback on stage with acoustic instruments.

Each XLR output has a dedicated 180° and Ground Lift switch

The Ground Lift switch disconnects pin-1 audio ground on the XLR output, which can help reduce hum and buzz that occurs due to ground loops. If you encounter ground loop noise when the PZ-Pro is connected, engaging the Ground Lift on each connected output can help alleviate this issue.

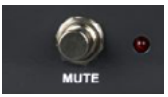
The Amp output

The 1/4" Amp output on the PZ-Pro is provided for feeding an on-stage amplifier or other instrument-level devices such as amp modelers or additional effects pedals. This output mirrors the Post EQ XLR output, so it includes all EQ & Filter settings, as well as the FX Loop and Boost controls when they are engaged. The Mute Footswitch cuts signal to this output.

THE TUNER OUT AND MUTE FOOTSWITCH

The PZ-Pro is equipped with a Mute Footswitch and a dedicated buffered Tuner output for quiet on-stage tuning without disrupting the performance. Use a standard 1/4" TS instrument cable to connect a tuner pedal to the PZ-Pro Tuner Out: This will send either Input-A or Input-B directly to your tuner depending on which channel is active (or both inputs if you have the A+B switch engaged).

The Tuner output



The Mute Footswitch

When the Mute Footswitch is engaged, the red LED next to the switch illuminates and all of the PZ-Pro outputs are turned off except the Tuner output. This also allows you to connect a different instrument to one of the PZ-Pro inputs without causing pops through the PA or the stage amplifier.

SPECIFICATIONS

Audio Circuit Type: ..... Proprietary active circuit
Number of channels: .....2x Inputs, Mono Pre and Post EQ XLR balanced Out
Frequency Response: ..... 20Hz - 20kHz ±0.5dB
Input Gain:..... +20dB (Instrument Input), +55dB (Mic Input)
Boost Gain:.....+10dB (PZ Boost) +15dB (Variable Boost)
Maximum Input - Instrument:..... +20dBu
Maximum Input - Microphone:..... 0dBu
Clip Level:.....+10dBu @ XLR output
Total Harmonic Distortion: ..... <0.005% (+4dBu, 20Hz-20kHz, unity gain)
Input Impedance:..... 220k Ohms at input jack (10Meg Ohms when PZ Boost active)
Output Impedance - XLR:..... 150 Ohms
Output Impedance - 1/4" Amp Out: ..... 1k Ohms
Output Impedance - Tuner Out:..... 2.6k Ohms
Noise: .....-91dB

General

Construction: .....14-gauge steel
Size:..... 9.10"L x 5.32"W x 1.82"H (231 x 135 x 46mm)
Weight: 5.0lbs (2.27kg)
Power: .....15VDC, 400mA (center pin positive)
FCC Approval: .....Complies with section 15 of the FCC rules
Conditions:.....For indoor use at temperatures between +5°C and +40°C
Warranty: .....Radial 3-year, transferable
Specifications are subject to change without notice

In order to meet Electromagnetic and Safety Compliance requirements Radial Engineering is recommending to use the PZ-Pro product with the provided R800 9415 00 power adapter, Model: GME6A-150040FX, Input: 100-240V, 50-60Hz, 0.25A, Output 15V, 0.4A, I.T.E.Power Supply, considering all Electromagnetic and Safety compliance was performed using only this power adapter mentinoned above

THREE YEAR TRANSFERABLE LIMITED WARRANTY

RADIAL ENGINEERING LTD. ("Radial") warrants this product to be free from defects in material and workmanship and will remedy any such defects free of charge according to the terms of this warranty. Radial will repair or replace (at its option) any defective component(s) of this product (excluding finish and wear and tear on components under normal use) for a period of three (3) years from the original date of purchase. In the event that a particular product is no longer available, Radial reserves the right to replace the product with a similar product of equal or greater value. In the unlikely event that a defect is uncovered, please call 1-800-939-1001 or email service@radialeng.com to obtain a RA number (Return Authorization number) before the 3 year warranty period expires. The product must be returned prepaid in the original shipping container (or equivalent) to Radial or to an authorized Radial repair center and you must assume the risk of loss or damage. A copy of the original invoice showing date of purchase and the dealer name must accompany any request for work to be performed under this limited and transferable warranty. This warranty shall not apply if the product has been damaged due to abuse, misuse, misapplication, accident or as a result of service or modification by any other than an authorized Radial repair center.

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To meet the requirements of California Proposition 65, it is our responsibility to inform you of the following:
WARNING: This product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.
Please take proper care when handling and consult local government regulations before discarding.

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